

+49 621 6072866

Docket No.: 293775US0PCT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

GROUP: 1626

Juergen TROPSCH, et al.

SERIAL NO: 10/588,217

EXAMINER: F. POWERS

FILED: August 2, 2006

FOR: ALKYL ETHER SULFATES

DECLARATION UNDER 37 C.F.R. § 1.132COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Now comes _____ Juergen Tropsch _____ who

deposes and states that:

1. I am a graduate of Friedrich-Alexander-Universität Erlangen-Nuernberg
and received my _____ Ph.D. _____ degree in the year
_____ 1990 _____.

2. I have been employed by _____ BASF SE _____
_____ for _____ 12 _____ years as a _____ chemist _____
_____ in the field of _____ surfactants _____.

3. The following experiments were carried out by me or under my direct supervision
and control.

Comparative examples were prepared which show that the sulfated ethers based on i-
C₁₀-alcohol according to Verdicchio et al. are less effective as surfactants compared to the i-
C₁₀-alcohol based sulfates according to the present invention, as discussed in detail below.

U.S. Application Serial No. +49 621 6072866

The ethersulfates based on i-C₁₀-alcohol according to Verdicchio et al. have been prepared according to the general protocol for sulfating alcohols/alcohol alkoxylates according to page 21, lines 6 to 17 of the English description of the present application.

Alkyl ether sulfates based on i-C₁₀-alcohols have been prepared using 3 equivalents of ethylene oxide (comparative example 1), 2 equivalents of propylene oxide followed by 2 equivalents of ethylene oxide (comparative example 2) and 2 equivalents of propylene oxide and 3 equivalents of ethylene oxide (comparative example 3). The critical micelle concentration (cmc) has been determined according to page 22, lines 1 and 2 of the description of the present application. The results of the comparative examples and of examples 4, 5 and 6 according to the table on page 21 of the description are shown in the following table:

Example	Alcohol	Amount PO [mol]	Amount EO [mol]	Cmc [mmol/l]
Comp. Ex. 1	i-C ₁₀	0	3	4.60
Comp. Ex. 2	i-C ₁₀	2	2	3.46
Comp. Ex. 3	i-C ₁₀	2	3	2.61
Example 4	i-C ₁₃	2	0	0.27
Example 5	i-C ₁₃	2	1	0.33
Example 6	i-C ₁₃	2	3	0.22

PO: propylene oxide

EO: ethylene oxide

cmc: critical micelle concentration

The alkyl ether sulfates according to Verdicchio et al. show high cmc of 4.60 mmol/l, 3.46 mmol/l and 2.61 mmol/l. In contrast, the inventive alkyl ether sulfates based on i-C₁₃-alcohol show very low cmcs of 0.27 mmol/l (example 4), 0.33 mmol/l (example 5) or 0.22 mmol/l (example 6). In particular, example 6 being the inventive i-C₁₃-alcohol propoxylated

U.S. Application Serial No. 13,533,211, +49 621 6072866

with 2 equivalents of propylene oxide followed by 3 equivalents of ethylene oxide shows a very low cmc of only 0.22 mmol/l, whereas directly comparable example 3, being the i-C₁₀-alcohol according to Verdicchio et al., being alkoxyated with 2 equivalents of propylene oxide followed by 3 equivalents of ethylene oxide shows a high cmc of 2.61 mmol/l being about 12 times higher than the one of example 6 according to the present application. The Cmc values were determined according to page 22, lines 1 and 2 of the present specification.

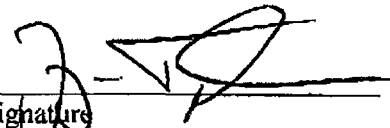
The examples according to the present invention and the comparative examples which have been prepared as described herein clearly show that the difference in respect of the alcohol, i-C₁₃ according to the present application versus i-C₁₃-alcohol according to Verdicchio et al., shows an unexpected and surprising advantage. The cmc, which is a very important characteristic feature of a surfactant, can be decreased about 12 times.

Verdicchio et al. do not point in the direction that i-C₁₃-alcohols forming the basis of alkyl ether sulfates make it possible to decrease the cmc of these compounds to 1/12 compared to the i-C₁₃-alcohol. Therefore, substitution of i-C₁₀ according to Verdicchio et al. by i-C₁₃ according to the present application is not suggested to a person having ordinary skill in the art and also shows unexpected and significant advantages.

4. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

U.S. Application Serial No. 10,586,217
+49 621 6072866

5. Further deponent saith not.


Signature

2010/06/24
Date